



April 9, 2012

VIA ELECTRONIC MAIL

Glenn Keith
Department of Environmental Protection
Bureau of Waste Prevention
One Winter Street, 7th Floor
Boston, MA 02108
glenn.keith@state.ma.us

RE: Proposed Revision to Massachusetts Regional Haze State Implementation Plan to Address Best Available Retrofit Technology for Electric Generating Units

Dear Mr. Keith:

Please accept the following comments submitted on behalf of the Sierra Club, the Massachusetts Chapter of the Sierra Club, and Conservation Law Foundation (“CLF”) regarding the Massachusetts Department of Environmental Protection’s (“Mass DEP’s”) proposed revision to the Massachusetts regional haze state implementation plan (“SIP”) to address Best Available Retrofit Technology (“BART”) requirements for electric generating units (“EGUs”).

For the reasons set forth herein, Mass DEP’s proposed plan to address BART requirements for EGUs does not comply with the requirements of the Clean Air Act (“CAA”) and EPA’s implementing regulations, 40 C.F.R. Pt. 51. Mass DEP impermissibly seeks to rely on a handful of state regulations as an alternative to requiring source-specific BART emission limits for subject-to-BART EGUs in Massachusetts. However, not only does the plain language of the Clean Air Act preclude the use of such alternatives, but Massachusetts has also failed to meet its specific obligations under EPA’s regional haze regulations to justify the use of these regulations to replace source-specific BART limits.

First and most fundamentally, Mass DEP has not included or referenced in its SIP revision the statutorily required source-by-source BART analysis for each emission unit subject to BART. Consequently, Mass DEP cannot actually substantiate whether its proposed BART alternative results in greater reductions of haze-forming pollutants than would be achieved under source-by-source BART, as is required for Mass DEP to rely on a BART alternative. EPA has promulgated detailed BART guidelines that lay out the five-step process that must be followed to determine BART for units at facilities with a capacity greater than 750 MW. Mass DEP must follow that process here for Brayton Point, Canal, Mystic and Salem Harbor and must include these analyses in its SIP. In

addition, for units at smaller facilities, the statute and regulations set forth factors that Mass DEP must consider in establishing BART. These analyses are missing from Mass DEP's proposed regional haze SIP, and this deficiency must be remedied before Mass DEP can purport to rely on its proposed BART alternative.

Second, in seeking to demonstrate that its proposed BART alternative produces emissions benefits relative to source-specific BART, Mass DEP improperly compared emissions reductions under its proposed BART alternative to those under MANE-VU's categorically derived presumptive BART. But presumptive BART is not BART, and is not a substitute for analyses that comply with the regional haze rule and BART guidelines for each subject-to-BART source. Because source-specific BART limits are often significantly lower than those identified by EPA as presumptive BART, Mass DEP's comparison of its BART alternative to presumptive BART is impermissibly skewed in favor of the BART alternative. Mass DEP must redo its analysis and compare emission reductions under the proposed alternative to those produced by full source-specific BART analyses. Mass DEP must include in this analysis an evaluation of the impact of source-specific emission reductions on each affected Class I area.

Third, Mass DEP cannot establish that its proposed BART alternative results in greater reasonable progress toward achieving natural baseline visibility conditions in Class I areas than would properly conducted source-by-source BART. Mass DEP's comparison of the sulfur dioxide ("SO₂") and nitrogen oxide ("NO_x") emission reductions under its proposed alternative and source-specific BART is fatally flawed because the agency ignores emission reductions already being achieved at subject-to-BART units and ignores enforceable emission reductions at units subject to its BART alternative that should be included as well in the source-specific BART benchmark case. Correcting these errors reveals that in 2018 source-specific BART would result in SO₂ emissions reductions at least 8,600 tons *greater* than under the BART alternative and NO_x emissions at least 3,200 tons *greater* than under Mass DEP's proposed alternative to BART. Consequently, Mass DEP cannot demonstrate that its proposed BART alternative would result in greater reasonable progress toward achieving natural baseline visibility conditions in the areas protected by the regional haze rule.

Fourth, the Massachusetts SIP revision fails to demonstrate that the distribution of emission reductions under its proposed BART alternative will be similar to that under source-specific BART or conduct dispersion modeling showing that the BART alternative results in greater reasonable progress in areas protected by the regional haze rule. Although Mass DEP asserts that the distribution of emissions is similar, its rationale is flawed and a further demonstration is required.

In addition, Mass DEP has not demonstrated that the state will achieve the reasonable progress goals established by MANE-VU for 2018. MANE-VU includes as a reasonable progress goal emission reductions of 90% from each of the 167 power plant stacks in the MANE-VU region whose SO₂ emissions were determined to significantly impair visibility in one or more MANE-VU Class I areas. The Massachusetts regional

haze SIP fails to put the state on a path to achieve those reductions, even under the optimistic projections made by Mass DEP, and fails to require enforceable commitments to achieve these reductions. To remedy this deficiency, the SIP at a minimum should include enforceable requirements that Mount Tom and Brayton Point operate their sulfur dioxide controls continuously and require an enforceable SO₂ emission limit of zero for Salem Harbor Units 1 and 2 consistent with the consent decree requiring the shutdown of the Salem Harbor facility as a coal-fired power plant.

Massachusetts sources contribute substantially to visibility impairment at a number of national parks and wilderness area. In evaluating the cost-effectiveness of BART controls, Mass DEP should fully account for the cumulative emission reductions that these can achieve for visibility across vistas at *all* impacted national parks and wilderness areas. Massachusetts should give particular consideration to the substantial adverse impact that Dominion's Brayton Point power plant is having on visibility at Maine's Acadia National Park, and every effort should be made to reduce the plant's visibility impact on this remarkable and beautiful area on the Maine coast.

I. BACKGROUND

A. The Clean Air Act's Visibility Program

The Clean Air Act's visibility program requires elimination of visible air pollution at the country's national parks, wilderness areas, and other premier public lands ("Class I areas"), encompassing a total of 156 protected public lands that include many of the nation's most iconic vistas. Preservation of these views has an obvious and demonstrable intrinsic value; as National Park Service studies confirm, visitors' enjoyment of a national park is tied to visibility.¹ Preserving visibility also helps sustain the healthy tourism industry centered on visits to the nation's iconic landmarks. The same National Parks Service surveys demonstrate that visibility conditions affect the amount of time and money visitors are willing to spend at national parks.² In 2010 alone, national parks tourism contributed approximately \$31 billion to the United States economy, sustaining over 250,000 jobs.³ Massachusetts received over 9.7 million recreation visits in 2009 and \$384 million in non-local visitor spending.⁴ And more than

¹ National Parks Service, Visibility Effects of Air Pollution: Importance of Visual Air Quality to Visitor Experience, <http://www.nature.nps.gov/air/AQBasics/visibility.cfm>.

² *Id.*

³ Southwick Associates, The Economics Associated with Outdoor Recreation, Natural Resources Conservation and Historic Preservation in the United States, at 17 (Oct. 10, 2011), available at www.nfwf.org/Content/ContentFolders/NationalFishandWildlifeFoundation/HomePage/ConservationSpotlights/TheEconomicValueofOutdoorRecreation.pdf; United States Department of the Interior, Office of Policy Analysis, The Department of the Interior's Economic Contributions, at 9 (June 21, 2011), available at www.doi.gov/ppa/upload/DOI-Econ-Report-6-21-2011.pdf.

⁴ Nat'l Park Service, Economic Benefits to Local Communities from National Park Visitation and Payroll, 2009 at Table A-4 (Jan. 2011), attached as Ex. 1.

2.2 million people visit Acadia National Park each year⁵ resulting in \$161 million in visitor spending.⁶ Despite the economic importance of these Class I areas, EPA has recognized that longstanding visibility problems continue to mar the landscape and obscure views of our most treasured landmarks. In most of the eastern National Parks of the United States, “the average visual range is less than 20 miles, or about one-fifth of the visual range that would exist under estimated natural conditions.” Regional Haze: Revisions to Provisions Governing Alternatives to Source-Specific Best Available Retrofit Technology (BART) Determinations, Limited SIP Disapprovals, and Federal Implementation Plans, 76 Fed. Reg. 82219, 82222 (Dec. 30, 2011).

While the visibility program primarily seeks to preserve the iconic vistas across the country, the program provides important ancillary health and environmental co-benefits as well. Haze is caused predominantly by fine particles, which absorb and scatter sunlight. Haze-forming pollutants, including SO₂ and NO_x, contribute to health problems, meaning that any program that requires controls to target and reduce these pollutants will also improve public health. For example, SO₂ and particulate matter (“PM”) are associated with serious lung and heart ailments, including premature death, while NO_x is a precursor to ground level ozone, or smog, which is associated with respiratory diseases, asthma attacks, and decreased lung function. In 2011, there were more than 262 exceedances of the EPA’s ozone air pollution standard at national parks—the highest number of exceedances since 2008. Even healthy adults are urged to limit outdoor exercise on days with high ozone. Given the overlap between the haze forming pollutants and health, EPA has estimated that in 2015, reductions in SO₂ and NO_x resulting from the Regional Haze Rule will prevent 1,600 premature deaths, 2,200 non-fatal heart attacks, 960 hospital admissions, and over 1 million lost school and work days, benefits valued at \$8.4 - \$9.8 billion annually.

Recognizing that manmade haze diminishes visibility and degrades the integrity of many of the nation’s national parks and wilderness areas, Congress in 1977 amended the Clean Air Act, “declar[ing] as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution.” *See* 42 U.S.C. § 7491(a)(1); *see also* 40 C.F.R. pt. 81, subpt. D (listing the 156 protected Class I areas, including certain national parks, wilderness areas, and national memorial parks, as well as certain international parks). Among other things, Congress mandated that EPA adopt regulations that would require states to develop SIPs containing measures necessary to make reasonable progress toward the national goal of improving visibility, including installation and operation of BART at BART-eligible sources⁷ that could be reasonably

⁵ Hardner & Gulison, *The U.S. National Parks: An Economic Asset at Risk* (May 30, 2006), at 13, Table 5, attached as Ex. 2.

⁶ *Id.* at Table A-1.

⁷ A source is BART-eligible if it is a stationary source within one of 26 enumerated categories, was not in operation before August 7, 1962 but was in existence on August 7, 1977, and has the potential to emit 250 tons per year or more of any pollutant. 42 U.S.C. § 7491(b)(2)(A), (g)(7).

anticipated to cause or contribute to visibility impairment. 42 U.S.C. § 7491(a)(4), (b)(2)(A).

In 1999, EPA expanded the visibility program, promulgating the Regional Haze Rule. Regional Haze Regulations, 64 Fed. Reg. 35714 (July 1, 1999). Under that Rule, states are directed to submit SIPs containing emissions limitations representing BART and schedules for compliance for each BART-eligible source that may be anticipated to cause or contribute to any visibility impairment in a Class I area. *See* 40 C.F.R. § 51.308(e). BART is determined for each source based on a case-by-case analysis. *Id.* § 51.308(e)(1)(ii). Thus, a source may have to install BART as required to combat regional haze. The EPA further elaborated on requirements for determining BART in its BART guidelines, published on July 6, 2005. *See* Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations, 70 Fed. Reg. 39104 (July 6, 2005) (hereinafter “BART Guidelines”).

1. Best Available Retrofit Technology

EPA’s Part 51 regulations require states to submit implementation plans “containing emission limitations representing BART and schedules for compliance with BART for each BART–eligible source that may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I Federal area.” 40 C.F.R. § 51.308(e). At the same time, however, the regulations purport to permit states develop alternatives to source-specific BART where the state demonstrates that an emissions trading program or other alternative will achieve greater reasonable progress toward natural visibility conditions.” *Id.*; *see also id.* § 51.308(e)(2). Where a state seeks to rely on an alternative to source-specific BART, the state’s SIP must include, among other things, a demonstration that the alternative program “will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the State and covered by the alternative program.” *Id.* § 51.308(e)(2)(i). This demonstration must be based on:

- A list of all BART–eligible sources within the State;
- A list of all BART–eligible sources and all BART source categories covered by the alternative program;
- An analysis of the best system of continuous emission control technology available and associated emission reductions achievable for each source within the State subject to BART and covered by the alternative program. Subject to limited exceptions, this analysis must be conducted by making a determination of BART for each source subject to BART and covered by the alternative program as provided for in paragraph (e)(1) of this section;

- An analysis of the projected emissions reductions achievable through the alternative program; and
- A determination based on the clear weight of evidence that the trading program or other alternative measure achieves greater reasonable progress than would be achieved through the installation and operation of BART at the covered sources.

Id. § 51.308(e)(2)(i)(A)-(E).

To determine whether a State program satisfies the latter requirement, the State must determine whether the distribution of emissions is substantially different than under BART. If the distribution of emissions is significantly different, the State must conduct dispersion modeling to determine differences in visibility between BART and the trading program for each impacted Class I area, for the worst and best 20 percent of days. *Id.* § 51.308(e)(3). The modeling is deemed to demonstrate “greater reasonable progress” if both of the following two criteria are met:

- Visibility does not decline in any Class I area, and
- There is an overall improvement in visibility, determined by comparing the average differences between BART and the alternative over all affected Class I areas.

Id. § 51.308(e)(3)(i) & (ii).

EPA has provided guidance regarding the method by which sources subject to BART must conduct their BART determinations. *See generally* BART Guidelines; 40 C.F.R. Pt. 51, App. Y (Guidelines for BART Determinations Under the Regional Haze Rule). The guidelines are mandatory for making BART determinations for sources that are part of power plants of at least 750 MW, but are not strictly required for other types of sources. 40 C.F.R. pt. 51, App. Y § I.F. Pursuant to the guidelines, subject to BART sources must undergo a five-step BART analysis. *Id.* § IV.D.

- Step 1--Identify All Available Retrofit Control Technologies: The guidelines explain that in identifying “all” options, the source must identify the most stringent option and a reasonable set of options for analysis that reflects a comprehensive list of available technologies. *Id.* § IV.D.
- Step 2--Eliminate Technically Infeasible Options: Pursuant to the guidelines, control technologies are technically feasible if either (1) they have been installed and operated successfully for the type of source under review under similar conditions, or (2) the technology could be applied to the source under review. *Id.* Claims of technical infeasibility must be documented and must explain, based on physical, chemical, or engineering principles, why technical difficulties would

preclude the successful use of the control option on the emissions unit under review. *Id.* § IV.D.2.

- Step 3--Evaluate Control Effectiveness of Remaining Control Technologies: The guidelines require that the analysis express the degree of control using a metric that ensures an “apples to apples” comparison of emissions performance levels among options, and gives appropriate treatment and consideration of control techniques that can operate over a wide range of emission performance levels. *Id.* § IV.D.3.
- Step 4--Evaluate Impacts and Document the Results: The guidelines require a four-part impact analysis that includes evaluating: (1) the cost of compliance; (2) energy impacts; (3) non-air quality environmental impacts; and (4) remaining useful life of the source. *Id.* § IV.D.4. This requires an evaluation of cost effectiveness, including average cost-effectiveness. *Id.*
- Step 5--Evaluate Visibility Impacts: The guidelines outline the modeling requirements and considerations for evaluating visibility impacts for the control technologies included in Step 4. *Id.* § IV.D.5. 98th percent days should be compared for the pre- and post-control runs. *Id.*

Even where application of the BART guidelines is not mandatory, the State is still required to take a number of factors into consideration in evaluating BART for a source. These mandatory factors include: “the costs of compliance, the energy and nonair quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.” 42 U.S.C. § 7491(g)(2).

2. Reasonable Progress Goals and Long-term Strategy

In addition to requiring an evaluation and determination of BART for all subject to BART sources, the Clean Air Act’s visibility provisions require that states establish reasonable progress goals and demonstrate reasonable further progress toward attaining natural visibility conditions in Class I areas by 2064. In establishing reasonable progress goals, “the State must consider the uniform rate of improvement in visibility and the emission reduction measures needed to achieve it for the period covered by the implementation plan.” 40 C.F.R. § 51.308(d)(1)(i)(B). “For the period of the implementation plan, if the State establishes a reasonable progress goal that provides for a slower rate of improvement in visibility than the rate that would be needed to attain natural conditions by 2064, the State must demonstrate, based on the factors in paragraph (d)(1)(i)(A) of this section, that the rate of progress for the implementation plan to attain natural conditions by 2064 is not reasonable; and that the progress goal adopted by the State is reasonable.” *Id.* § 51.308(d)(1)(ii). “The State must provide to the public for

review as part of its implementation plan an assessment of the number of years it would take to attain natural conditions if visibility improvement continues at the rate of progress selected by the State as reasonable.” *Id.* § 51.308(d)(1)(ii). The EPA must consider the reasonable progress goals established by the State in evaluating the adequacy of the measures in the implementation plan to achieve the progress goal adopted by the State. *Id.* § 51.308(d)(1)(v). “If the State has participated in a regional planning process, the State must ensure it has included all measures needed to achieve its apportionment of emission reduction obligations agreed upon through that process.” *Id.* § 51.308(d)(3)(ii).

After setting reasonable progress goals, the state must also develop a long-term strategy that relies on enforceable emissions limitations and other measures “as necessary to achieve the reasonable progress goals.” *Id.* § 51.308(d)(3). In establishing its long-term strategy for regional haze, the regional haze rule requires at the very least a consideration of the following factors: (1) emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment; (2) measures to mitigate the impacts of construction activities; (3) emissions limitations and schedules for compliance to achieve the reasonable progress goal; (4) source retirement and replacement schedules; (5) smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the State for these purposes; (6) enforceability of emissions limitations and control measures; and (7) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy. *Id.* § 51.308(d)(3)(iv). In addition, the long term strategy must be reflective of emission limitations representing BART and schedules for compliance with BART for each BART-eligible source that may reasonably be anticipated to cause or contribute to impairment in visibility at in or out of state class I areas which in-state sources impair visibility, unless the state can demonstrate that an emissions trading program or other alternative will achieve greater reasonable progress toward natural visibility conditions. *Id.* § 51.308(e). The state must also have submitted a monitoring strategy for measuring, characterizing, and reporting regional haze visibility impairment at impacted Class I areas. *Id.* § 51.308(d)(4).

3. 310 Code of Massachusetts Regulations 7.19 and 7.29

Massachusetts has promulgated regulations that address emissions of SO₂ and NO_x from certain sources that are also subject to regulation under EPA’s regional haze rule. Specifically, 310 CMR Section 7.19 establishes reasonably achievable control technology (“RACT”) standards for NO_x for a variety of categories of sources while 310 CMR Section 7.29 establishes emissions standards for power plants. Pursuant to Section 7.19, large boilers—those with a heat rate greater than 100 MMBtu/hr—are required to achieve and maintain continuous compliance with specified NO_x emission limits expressed in pounds per MMBtu. 310 CMR 7.19(4)(a). Sources also have the option of electing to comply with an alternative emissions rate set forth in 310 CMR 7.19(4)(c). Pursuant to Section 7.29, owners and operators of power plants are responsible for ensuring that affected facilities comply with emission rates for NO_x and SO₂ that are set

forth in 310 CMR 7.29(5). *See id.* 7.29(4)(a); 7.29(5)(a). For both NO_x and SO₂, the applicable emission rates are established in pounds per MWh,⁸ and include a rolling 12-month average limits as well as a monthly limit. *See id.* 7.29(5)(a)1. and (5)(a)2.

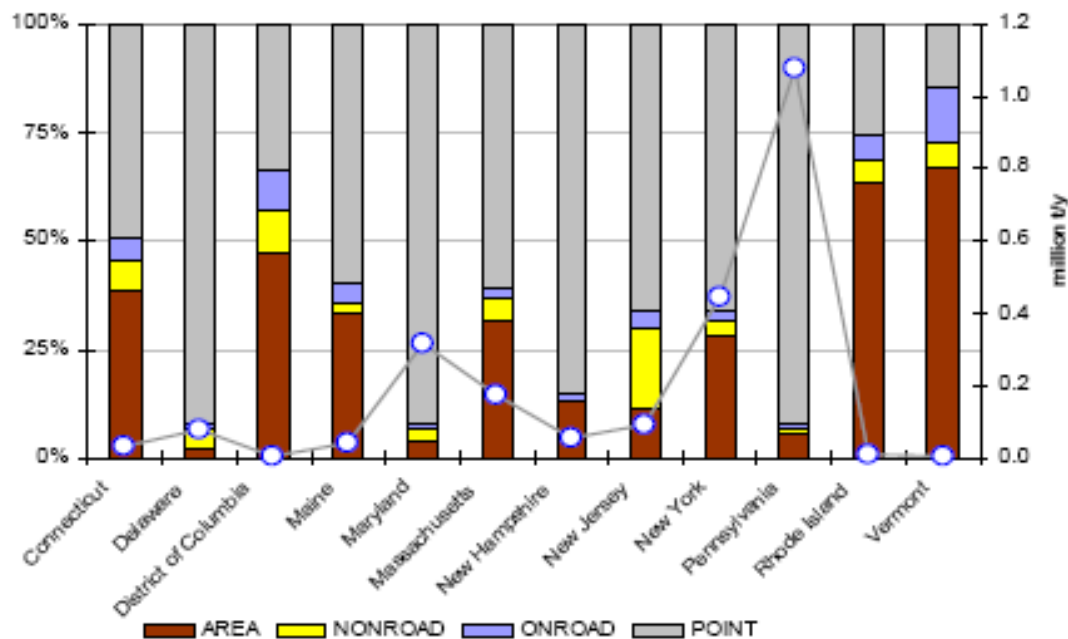
B. The Massachusetts Revised Regional Haze SIP

Although Massachusetts contains no Class I areas within its borders, sources of air emissions from Massachusetts have a significant impact on visibility in a number of Class I areas outside of the State. Class I areas significantly impacted by emissions from Massachusetts include Acadia National Park and the Moosehorn Wilderness in Maine, the Presidential Range-Dry River Wilderness Area in New Hampshire, the Lye Brook Wilderness in Vermont, and Roosevelt Campobello International Park in Maine/Canada. Mass. Reg. Haze SIP at ii. Individual emission sources in Massachusetts played a large role in visibility impairment. For example, emissions from Brayton Point modeled using the MM5 Platform indicated an 11.15 deciview visibility impairment at Acadia National Park on the worst days relative to 20% best natural conditions. *Id.* at 75, Table 12. Using the NWS Platform, modeled emissions from Brayton Point resulted in a 7.200 deciview impairment at Moosehorn Wilderness on the worst days relative to the 20% best natural conditions. *Id.* at 75, Table 12. Modeling using the MM5 Platform, also predicted a 6.643 deciview impairment at Acadia National Park from Mirant's Canal Station and impacts of around 1 deciview each from Mystic Station and Salem Harbor. *Id.* at 75, Table 11.

As the table below illustrates, SO₂ emissions from power plants are the "single largest sector contributing to the visibility impairment experienced in the Northeast's Class I areas." Mass. Reg. Haze SIP at 13. "Sulfate formed through atmospheric processes from SO₂ emissions are responsible for over half the mass and approximately 70-80 percent of the light extinction on the worst visibility days." *Id.* However, power plant NO_x emissions in Massachusetts also contribute significantly to visibility impairment in Class I areas. *See* BART Chapter of Draft Mass. Reg. Haze SIP (July 31, 2009), at 20, Table 9 (NO₃ emissions from Brayton Point alone contributes an over 3.3 deciview impairment).

⁸ According to Mass DEP, "3.0 lbs/MWh . . . is roughly equivalent to 0.3 lbs/MMBtu." Mass. Reg. Haze SIP Rev. at 16.

Figure 29: 2002 Sulfur Dioxide Emissions (SO₂) by State



Bar Graph: Percentage Fractions of the Four Source Categories
(-o-) Line Graph: Total State Annual Emissions (10⁶ tpy)

Source: Mass. Reg. Haze SIP at 59, Fig. 29.

In order to reduce emissions of haze-forming pollutants to comply with the Clean Air Act's regional haze requirements, Massachusetts developed a SIP, which was released on December 30, 2011. Massachusetts initially intended to meet its regional haze emission reduction requirements for EGUs by relying on reductions contained in EPA's transport rule, now known as the Cross-State Air Pollution Rule ("CSAPR"). Mass. Reg. Haze SIP Rev. at 1. However, EPA declined to include Massachusetts in the final version of CSAPR. *Id.* Rather than include source-specific BART analyses for each subject to BART source in Massachusetts,⁹ Mass DEP relied on generic recommendations made by MANE-VU regarding categorical BART emission rates for EGUs for SO₂ and NO_x. Mass DEP then compared these emission reductions to those that would be achieved through 310 CMR 7.19 and 7.29, coupled with certain permit restrictions for Brayton Point, Salem Harbor and Mount Tom, and the retirement of the Somerset power plant. *See id.* According to Mass DEP, the emission reductions achieved through its proposed BART alternative exceeded those under the MANE-VU recommended BART limits by 4,234 tons of SO₂/year, *id.* at 8, and 297 tons of

⁹ It is clear from the July 31, 2009 "BART Chapter of Draft Massachusetts Regional Haze SIP" that Mass DEP did initially give some consideration to specific BART control technologies at individual subject-to-BART units in the state. However, these analyses were not included in the appendices to the draft SIP or SIP revision and do not appear to have been relied up on in determining the BART baseline.

NOx/year, *id.* at 10. Mass DEP did not quantify differences in the distribution of emissions under source-specific BART and the proposed BART alternative, or model whether these differences would affect reasonable progress toward achieving natural baseline visibility conditions in affected Class I areas.

II. ARGUMENT

A. The Plain Language of the Clean Air Act Precludes Sweeping Alternative Programs to Replace Source-Specific BART Limits

EPA cannot authorize states to rely on alternative programs to opt out of BART. Under the Clean Air Act, BART is a mandatory measure that must be implemented to achieve reasonable progress toward restoration of natural visibility conditions. Section 169A(b)(2)(A) expressly requires states to adopt SIPs that “contain such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal . . . *including*” installation and operation of BART at BART-eligible sources that emit any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any Class I area. *See* 42 U.S.C. § 7491(b)(2)(A) (emphasis added). The only permissible exemption from BART is expressly set forth in § 169A(c). *See* 42 U.S.C. § 7491(c). Under § 169A(c), a source can be exempt from BART only if EPA, by rule promulgated with sufficient notice and opportunity for public comment, determines that the source does not either by itself or in combination with other sources “emit any air pollutant which may reasonably be anticipated to cause or contribute to a significant impairment of visibility in any mandatory class I federal area.” 42 U.S.C. § 7491(c)(1). Further, EPA cannot exempt a fossil-fuel fired power plant with a design capacity of 750 megawatts or more, unless the owner or operator of the plant can demonstrate that the power plant is located far enough away from the class I areas that it satisfies the exemption criteria above. 42 U.S.C. § 7491(c)(2). Likewise, the appropriate Federal Land Manager or managers must agree with the exemption before it can go into effect. 42 U.S.C. § 7491(c)(3). Thus, EPA’s authority to exempt sources from BART is very narrowly defined. Nowhere in Section 169A did Congress contemplate or sanction sweeping alternative programs that would operate in lieu of source specific BART, and there is no statutory authority for EPA regulations that purport to allow for reliance on alternative programs in place of BART. *See* 40 C.F.R. § 51.308(e)(2). Nevertheless, the D.C. Circuit Court of Appeals has upheld such regulations, concluding that BART is not mandatory but rather one of many available options that EPA and state agencies may impose at their discretion to achieve reasonable progress. *See Center for Energy & Economic Dev. v. EPA*, 398 F.3d 653 (D.C. Cir. 2005) (“*CEED*”) (holding that § 169A did not require use of BART); *Utility Air Regulatory Group v. EPA*, 471 F.3d 1333, 1340 (D.C. Cir. 2006) (“*UARG*”) (relying on *CEED* for the proposition that “EPA may leave states free to implement BART-alternatives so long as those alternatives also ensure reasonable progress”). In so holding, *CEED* and *UARG* effectively read mandatory BART requirements out of the Clean Air Act. Because these cases cannot be reconciled with the plain language of the

Clean Air Act, Massachusetts should not rely on them to exempt itself from implementing BART.

B. Mass DEP's Proposed BART Alternative Is Not an Acceptable Alternative to Source-Specific BART Limits

1. Mass DEP Has Not Included in Its SIP the Required Source-Specific BART Analysis for Each Subject-to-BART Source in the State and Each Source the Emissions from Which Mass DEP Purports to Rely on in Its BART Alternative

EPA regulations make clear that a state seeking to rely on an alternative to source-specific BART must conduct a BART analysis for all sources subject to BART and all sources included in its BART alternative and submit these analyses as part of its SIP. However, Mass DEP has not included such analyses in its SIP for any sources in the state. This failure precludes reliance on Mass DEP's proposed BART alternative.

For any alternative to BART that a state proposes, the state must submit an implementation plan that contains "[a]n analysis of the best continuous emission control technology available and associated emissions reductions achievable *for each source* within the State subject to BART and covered by the alternative program." 40 C.F.R. § 51.308(e)(2)(C) (emphasis added). This analysis must be conducted "*by making a determination of BART for each source subject to BART and covered by the alternative program,*" as described in the regulations. *Id.* (emphasis added). The regulations specify that for subject-to-BART units at facilities with a total generating capacity exceeding 750 MW, the unit's BART analyses be conducted pursuant to the BART guidelines promulgated under 40 C.F.R. Part 51, Appendix Y. 42 U.S.C. § 7491(b)(2). Moreover, the Clean Air Act requires that, for all sources, the source-specific BART analysis must take into consideration "the costs of compliance, the energy and nonair quality environmental impacts of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology." 42 U.S.C. § 7491(g) (emphasis added). Each of these factors is specific to the source and necessitates individualized consideration of each subject-to-BART source. Because the Massachusetts regional haze SIP contains no source-specific BART analyses, it fails to comply with the Clean Air Act and EPA's regional haze regulations.

2. Mass DEP's Comparison of Emission Reductions Under Its Proposed BART Alternative to Presumptive BART Emissions Is Improper and Skews the Agency's Analysis in Favor of the Proposed BART Alternative

Source-specific BART analyses are not merely a procedural nicety under EPA's regional haze regulations; they are also necessary for Mass DEP to be able to evaluate whether its proposed emission reductions will actually result in greater reasonable

progress toward achieving natural visibility conditions in Class I areas than would be achieved under source-by-source BART as required by 40 C.F.R. § 51.308(e)(2)(i). Mass DEP's approach of comparing emission reductions under its proposed BART alternative to generic emission limits for entire source categories was impermissible and artificially inflates the relative benefits of the BART alternative.

To support the use of its proposed BART alternative, Mass DEP compared SO₂ and NO_x emissions under its proposed BART alternative to a "BART benchmark" that was calculated using "recommended" BART limits derived by MANE-VU. As Mass DEP explained in its SIP revision, its BART benchmark for SO₂ and NO_x are based upon EPA's Appendix Y BART Guidelines, which set forth "presumptive" BART limits for generic categories of sources. Mass. Reg. Haze SIP Rev. at 5. The "presumptive BART" emission limits for EGUs included in EPA's BART Guidelines were based on EPA's broad review of the control technologies and emission limits that could be met cost effectively at a wide range of coal-fired power plants. *See* 40 C.F.R. pt. 51, App. Y, § IV.E.4 and 5. They do not represent *de facto* BART standards. *See* Approval and Promulgation of Implementation Plans; Arkansas; Regional Haze State Implementation Plan; Interstate Transport State Implementation Plan to Address Pollution Affecting Visibility and Regional Haze; Final Rule, 77 Fed. Reg. 14604, 14609 (Mar. 12, 2012) ("[T]he presumption in the BART Rule is not that the presumptive limits will be BART in every case. Rather, the presumption in the BART Rule is more accurately interpreted to be that the controls reflected by the presumptive limits are cost-effective and will result in considerable visibility improvement.").

Reliance on presumptive BART tends to skew the comparison in favor of the Mass DEP's proposed alternative. *See* BART Guidelines at 39171 ("While [presumptive SO₂ BART] may represent current control capabilities, we expect that scrubber technology will continue to improve and control costs continue to decline. You should be sure to consider the level of control that is currently best achievable at the time that you are conducting your BART analysis."). Recent actual BART determinations are often one half or one third of the presumptive limits, given the demonstrated ability of available air pollution control technology to reduce emissions at increasingly high levels of control efficiency. For example, EPA partially approved Oklahoma's SIP and issued a partial FIP for Oklahoma adopting SO₂ BART limits of 0.06 lb/MMBtu for several EGUs, a control that is 60% lower than presumptive BART of 0.15 lb/MMBtu that applies to scrubbed units that achieve less than 95% efficiency. *See* 76 Fed. Reg. 81728, 81730 (Dec. 28, 2011) (adopting the 0.06 lb/MMBtu SO₂ limit for Units 4 and 5 of the OG&E Muskogee plant, Units 1 and 2 of the OG&E Sooner plant, and Units 3 and 4 of the AEP/PSO Northeastern plant). For unscrubbed units, presuming that SO₂ BART limits will be commensurate with installing a scrubber with 95% efficiency likewise underrepresents BART; modern scrubbers today reduce SO₂ emissions by 99%. *See* Proposed Rule, 76 Fed. Reg. 16168, 16188 (March 22, 2011) (EPA Region 6 partial approval of Oklahoma SIP; noting that according to an industry contractor, "[w]et scrubbing is the predominant technology for large-scale utility applications in most parts

of the world”).¹⁰ Similarly, EPA has required emission limits that go beyond NO_x limits imposed as presumptive BART. Table 2-1 in the Technical Support Document sets forth the presumptive BART NO_x emission limits based on boiler configuration, and the lowest limit, imposed on cyclone boilers firing bituminous, subbituminous, or lignite coal, was 0.10 lb/MMBtu. Yet EPA has required San Juan Units 1-4 to install SCR and meet a NO_x limit of 0.05 lb/MMBtu on a 30-day operating average. 76 Fed. Reg. 52388, 52388 (Aug. 22, 2011). These requirements and limits, which represent BART based on EPA’s own source-specific analyses, go well beyond EPA’s presumptive NO_x BART limits.

Because presumptive BART is not a substitute for source-specific BART determinations, Mass DEP erred by failing to compare the emission reductions under its proposed BART alternative to properly-conducted source-specific BART.

3. Mass DEP Has Not Established That Its BART Alternative Results in Greater Emissions Reductions for SO₂ and NO_x Than Would Be Achieved Under Properly Conducted Source-Specific BART

The BART emissions benchmarks for SO₂ and NO_x included in Tables 16 and 18 of the SIP appear to significantly underpredict emission reductions that would be achieved under properly conducted source-specific BART. As a result, Mass DEP has not established that its proposed BART alternative would actually result in greater reductions in SO₂ and NO_x emissions than BART.

i. *SO₂*

The BART baseline for SO₂ significantly underestimates the emission reductions achievable under BART for Brayton Point and Salem Harbor. According to EIA Form 923 for 2010, the SO₂ control technology already installed at Brayton Point was achieving an SO₂ removal rate of 90% and 91% for Units 1 and 2 respectively in 2010. According to Table 16, the SO₂ emission rates for Units 1 through 3 in 2002 were: Unit 1 = 1.09 lb/MMBtu and Unit 2 = 1.11 lb/MMBtu. If these units merely continued to achieve their present, already demonstrated rate of at least 90% control efficiency, the units would have control efficiencies of 0.109 lb/MMBtu and 0.111 lb/MMBtu rather

¹⁰ Other technical sources likewise indicate that modern scrubbers can achieve SO₂ reduction efficiencies up to 99%. *See, e.g.*, Sargent & Lundy LLC, Wet Flue Gas Desulfurization Technology Evaluation, Project No. 11311-001 §§ 1.3.1-.2, at 10 (May 2006) (explaining that “[r]ecent contracts for LSFO [Limestone Forced Oxidation or conventional wet scrubber] technology in the US market have included guarantees of 99%,” and that “MEL [Magnesium Enhanced Lime] forced oxidation systems have achieved a better level of performance than the LSFO process, with SO₂ removal efficiencies between 98% and 99% in power plants also firing a variety of high- and low-sulfur coals”), attached as Ex. 3; Kevin Smith, William Booth, & Stephane Crevecoeur, Evaluation of Wet FGD Technologies to Meet Requirements for Post CO₂ Removal of Flue Gas Streams, Mega Paper No. 49 (2008), attached as Ex. 4; Chuck Dene, Lesley A. Baker & Robert J. Keith, FGD Performance Capability, Mega Paper No. 62 (2008) (identifying several technologies that have achieved or are capable of achieving 99% SO₂ control), attached as Ex. 5 (Dene et al. 2008).

than the presumptive BART emission rate of 0.15 lb/MMBtu. Correcting these emission rates downward in Table 16 demonstrates that, even absent further improvements in control efficiency, emissions from these two units should be at most 1,811 tons, not 2,467 tons as Mass DEP presumes, an overestimate of 656 tons.

Brayton Point Unit 3's BART emissions are also significantly overestimated. Mass DEP projects that Unit 3 will emit 2,725 tons of SO₂ in 2018 under presumptive BART. However, Dominion is installing a dry scrubber and fabric filter on Unit 3 that will be operational in 2014 and that it projects will reduce annual SO₂ emissions far below the 2,725 tpy presumed by Mass DEP. *See* Fact Sheet: Closed Cycle Cooling Tower and Unit 3 Dry Scrubber/Fabric Filter Projects (EPA Draft Permit Number 052-120-MA13). The fact sheet lists the projected actual emissions of SO₂ as 1,485 tpy. *Id.* at 12. Even assuming that BART would merely hold Unit 3 to the SO₂ emissions that the plant projects for itself, Mass DEP has overestimated BART by 1,240 tons. Moreover, the vendor has identified the SO₂ removal for Brayton Point Unit 3 with its dry scrubber as 96-98% depending on the sulfur content of the coal.¹¹ At 1% S, the removal efficiency is 98%, while at 2.5% S, the SO₂ removal is 96%. According to Mass DEP, the sulfur content of the coal at Brayton Point Unit 3 is 1.5%, *see* BART Chapter of Draft Mass. Reg. Haze SIP (July 31, 2009) at 10, Table 5, so the removal efficiency should be in the 96% and 98% range with 96% at the conservative end. At 96% removal efficiency, using on the 2002 baseline of 19,450 tpy, the 2018 SO₂ emissions should be 778 tons. Compared to the 2,725 tons of SO₂ in 2018 presumed by Mass DEP, 778 tpy represents an overestimate of 1,947 tons.

Next, Mass DEP presumes the closure of Salem Harbor Unit 4 in its BART alternative while assuming that this unit would generate 1,013 tons of SO₂ in 2018 under source-specific BART. This is not defensible. Salem Harbor Unit 4 is subject to an enforceable consent decree between the Conservation Law Foundation, Healthlink and Dominion that requires Dominion to cease operating the unit as a coal-fired unit no later than June 1, 2014. *Conservation Law Found. v. Dominion Energy*, Case No. 1:10-cv-11069, Consent Decree at ¶ 26 (D. Mass. Dec. 21, 2011). Moreover, BART limits for a source are required to take into consideration the remaining useful life of the source. 42 U.S.C. § 7491(g)(2); 40 C.F.R. § 51.308(e)(1)(ii)(A). Here, Dominion has *requested* an Amended Emission Control Plan that includes an enforceable shutdown of Salem Harbor Unit 4 by June 1, 2014. *See* Mass. Reg. Haze SIP Rev. at 6. The unit's remaining useful life is clearly less than 7 years. Consequently, source-specific BART for this unit should likewise involve closure of the plant prior to 2018 and zero emissions of SO₂ in 2018. Mass DEP therefore impermissibly credits its BART alternative with an unwarranted addition 1,013 tons of SO₂ reductions.

Further, in Table 17 Mass DEP credits its BART alternative with 9,998 tons of SO₂ reductions from Salem Harbor Units 1, 2 and 3. This is improper. Each of these units is subject to an enforceable consent decree between Conservation Law Foundation,

¹¹ *See* Alden, *The Wet vs. Dry Question for Scrubbers* (Dec. 8, 2011), at slide 24, attached as Ex. 6.

Healthlink, and Dominion requiring the complete shutdown of Salem Harbor as a coal-fired power plant no later than June 1, 2014.¹² *Conservation Law Found. v. Dominion Energy*, Case No. 1:10-cv-11069, Consent Decree at ¶ 26 (D. Mass. Dec. 21, 2011). Consequently, these emission reductions would have occurred under the source-specific BART scenario just as they occur in Mass DEP's BART alternative. EPA's regulations concerning alternatives to BART clearly require a "demonstration that the . . . alternative measure will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the State *and covered by the alternative program*." 40 C.F.R. § 51.308(e)(2)(i). Mass DEP therefore cannot consider the emissions reductions occurring at Salem Harbor Units 1 through 3 only for its BART alternative, but must include the enforceable emission reductions for these units in its analysis of source-specific BART as well.

In sum, Mass DEP has overestimated the 2018 projected SO₂ emissions under source-specific BART in Table 16 by at least 2,909 tons,¹³ thereby understating the reduction in SO₂ that would be achieved under BART by this amount. And at the same time, Mass DEP has failed to acknowledge at least 9,998 tons of SO₂ reductions from Salem Harbor that would occur under either BART or Mass DEP's proposed BART alternative and improperly credited these emission reductions exclusively to the BART alternative. The net result is that, rather than the proposed BART alternative resulting in 4,234 tons more SO₂ emissions than would occur under source-specific BART, as Mass DEP claims, *see* Mass. Reg. Haze SIP Rev. at 8, Mass DEP's proposed alternative would result in at least 8,673 tons *less* reductions in SO₂ in 2018 than under source-specific BART. Consequently, Mass DEP's proposed BART alternative for SO₂ is impermissible under 40 C.F.R. § 51.308(e)(2), which expressly requires that the BART alternative "achieve greater reasonable progress toward natural visibility conditions."

ii. NO_x

Likewise for NO_x, Mass DEP both underestimates the emission reductions that would be achieved under source-specific BART and improperly credits its proposed BART alternative with achieving thousands of tons of NO_x reductions from Salem Harbor that would occur under either scenario.

According to Mass DEP, its proposed BART alternative results in 297 tons of additional NO_x emissions as compared to source-specific BART. Mass. Reg. Haze SIP at 10. But for each of the units at Salem Harbor, Mass DEP improperly credits its BART alternative for emissions that are required to occur separate and apart from this SIP. For

¹² The consent decree, attached as Ex. 7, leaves Dominion the option to repower the units to a non-coal fuel. However, even if Dominion elected to repower to gas, the SO₂ emissions from the plant would be negligible, and would come nowhere near offsetting the massive SO₂ emission reductions that must necessarily occur pursuant to the consent decree by requiring Dominion to cease operating Salem Harbor as a coal-fired power plant.

¹³ $656 + 1,420 + 1,013 = 2,909$. Using the 1,947 ton overestimate rather than the 1,420 ton overestimate for Brayton Point Unit 3 would yield a total overestimate of $656 + 1,947 + 1,013 = 3,616$ tons.

Unit 4, Mass DEP unjustifiably projects emissions of 307 tons of NO_x in 2018 in the BART benchmark despite the existence of an enforceable consent decree requiring the complete shutdown of Salem Harbor as a coal-fired power plant no later than June 1, 2014. Reducing the BART NO_x benchmark by just the 307 improperly added tons from Unit 4 would result in greater emission reductions under source-specific BART (13,127) than Mass DEP's proposed BART alternative (13,117).

Moreover, for Units 1 through 3 Mass DEP credits the emission reductions that must occur at these units only for its BART alternative despite the existence of the consent decree. This is improper. *See* 40 C.F.R. § 51.308(e)(2)(i) (requiring "demonstration that the . . . alternative measure will achieve greater reasonable progress than would have resulted from the installation and operation of BART at all sources subject to BART in the State *and covered by the alternative program.*").

In addition, Mass DEP has not provided sufficient information in its regional haze SIP to evaluate or eliminate selective catalytic reduction ("SCR") or selective non-catalytic reduction ("SNCR") as control technologies for NO_x for Brayton Point Unit 2. Unlike the other two coal units at Brayton Point, Unit 2 continues to lack any post-combustion controls for NO_x. Although Mass DEP in an earlier draft of its BART SIP identified SCR and SNCR as mid-cost options with respective ranges of \$1,000-1,500 and \$500-\$700/ton of NO_x removed, Mass DEP declined to require either of these controls for Brayton Point Unit 2. *See* BART Chapter of Draft Mass. Reg. Haze SIP (July 31, 2009) at 21. Mass DEP claimed instead that the estimated costs for SCR and SNCR for this unit were "significantly higher than average because of physical space constraints" and asserted that that SNCR would achieve a control efficiency of only 15% (0.22 lb/MMBtu) at a cost of \$5,929/ton NO_x and \$33.5 million/deciview, while SCR would achieve only 80% control efficiency (0.10 lb/MMBtu) at a cost of \$20,670/ton NO_x and \$157.5 million/deciview. *Id.* at 24. The analyses leading to these cost-effectiveness conclusions were not included in the draft or final versions of the SIP.

As discussed above, it is necessary for Mass DEP to include the five-step BART analysis for Brayton Point Unit 2 in its regional haze SIP. Without being able to review the various assumptions that went into Mass DEP's conclusions, it is not possible to fully evaluate their accuracy. However, even from the information provided there is reason to be concerned about the calculations leading to these conclusions. For example, the control efficiencies associated with SCR and SNCR are significantly understated. According to EPA's Technical Support Document for the Transport Rule (Dkt. ID No. EPA-HQ-OAR-2009-0491) at 7, Table 1, for SCR or SNCR, NO_x emissions should be no higher than 0.06 lb/MMBtu. This is 40% below the presumed 0.10 lb/MMBtu assumed by Mass DEP, and even this emission rate would represent only a 75% control efficiency from the 0.23 lb/MMBtu NO_x emission rate that Unit 2 achieved in 2007. *See* BART Chapter of Draft Mass. Reg. Haze SIP (July 31, 2009) at 20, Table 9. Given that SCR is typically designed to achieve at least 90% control efficiency, significantly lower emissions are likely. Indeed, permitting agencies have required lower NO_x limits in recent BACT determinations, with many proposed and required BACT limits of 0.05

lb/MMBtu or lower. The Plant Washington PSD permit, issued in April 2010, requires that unit to meet a 0.03 lb/MMBtu annual average NO_x limit as BACT.¹⁴ The Desert Rock PSD permit includes a NO_x BACT limit as low as 0.035 lb/MMBtu.¹⁵ Recent National Park Service comments note emission rates of 0.05 lb/MMBtu determined by U.S. EPA for the San Juan Generating Station in New Mexico. *See* NPS, Comments on Proposed BART for Nebraska Public Power District Gerald Gentleman Station Units 1 and 2 (Mar. 30, 2012), at 5. Mass DEP also needs to justify its reliance on a 15% assumed control efficiency for SNCR, which is below the 25-40% range identified by Mass DEP with no explanation offered. BART Chapter of Draft Mass. Reg. Haze SIP (July 31, 2009) at 22. Increasing the assumed control efficiency for SNCR would into this range would greatly improve its apparent cost-effectiveness.

It also appears that Mass DEP took an unduly narrow view of the range of acceptable costs for NO_x controls. Keeping in mind that the visibility impairment attributable to NO_x from Brayton Point is very great—3.354 deciviews according to Mass DEP, *see id.* at 20, Table 9—even the inflated costs identified by Mass DEP in the 2009 draft BART SIP are likely to be cost-effective for SNCR. As EPA recently concluded in the context of the Montana regional haze SIP for the Corette Power Plant in Billings, Montana, the \$4,491/ton-NO_x cost effectiveness for overfire air plus SCR “is well within the range of values we have considered reasonable for BART and that states have considered reasonable for BART.” *See* Approval and Promulgation of Implementation Plans; State of Montana; State Implementation Plan and Regional Haze Federal Implementation Plan; Proposed Rule (signed) (Mar. 20, 2012) at 143-44. *See also* Source Specific Federal Implementation Plan for Implementing Best Available Retrofit Technology for Four Corners Power Plant: Navajo Nation; Proposed Rule, 75 Fed. Reg. 64221, 64227 (Oct. 19, 2010) (“[E]ven if EPA had decided to accept APS's worst-case cost estimates of \$4,887 - \$6,170/ton of NO_x removed, EPA considers that estimate to be cost effective for the purpose of proposing an 80% reduction in NO_x, achievable by installing and operating SCR as BART at [Four Corners].”). Before reaching any ultimate conclusions about NO_x BART for Brayton Point Unit 2, Mass DEP must provide a complete and transparent five-step BART analysis for Brayton Point Unit 2 that fully evaluates both SNCR and SCR as BART for NO_x emissions from that unit. When this is done in a manner that accurately accounts for costs and incorporates the full emissions reductions achievable for SCR and SNCR, it is likely that BART will entail significantly greater NO_x reductions from Unit 2.

Because Mass DEP's assumptions about SO₂ and NO_x reductions achievable under source-specific BART are dramatically understated and actual SO₂ and NO_x reductions under source-specific BART exceed those under Mass DEP's BART alternative, Mass DEP's BART alternative fails to meet the basic requirements of 40 C.F.R. § 51.308(e)(2).

¹⁴ A copy of the Plant Washington permit is included as Ex. 8.

¹⁵ The Desert Rock Energy Facility permit requires the facility to achieve, after a NO_x optimization period, a NO_x emission rate of 0.035 lb/MMBtu on a 365 day rolling average and an emission rate of 0.05 lb/MMBtu on a 30-day rolling average. (Ex. 9).

4. Mass DEP Has Not Demonstrated That the Distribution of Emissions Under Its BART Alternative Is Substantially Similar to That Under BART or Conducted Dispersion Modeling to Show the BART Alternative Results in Greater Reasonable Progress Toward Achieving Natural Baseline Visibility Conditions in Affected Class I Areas

Even if it were the case that the emission reductions under Mass DEP's proposed BART alternative exceeded those under properly-conducted source-specific BART, Mass DEP must still demonstrate that the distribution of emissions under the alternative program are similar to those under source-specific BART, or, if they are not, must conduct dispersion modeling to show that the alternative program benefits visibility in Class I areas. While Mass DEP asserts that the distribution of emission reductions is similar, the logic it relies on in making this claim is flawed. And Mass DEP has not presented the requisite dispersion modeling to show that the alternative program achieves greater reasonable progress in Class I areas.

Under EPA's haze regulations, it is insufficient to simply compare the total emissions reductions from source-specific BART and a state's BART alternative; the state must also take into consideration the location of these emission reductions. Where the distribution of emissions under BART and the alternative are substantially different, the state proposing to rely on a BART-alternative must conduct dispersion modeling to show the difference in visibility under each program for each impacted Class I area on the worst and best 20 percent of days. *See id.* The modeling will demonstrate greater reasonable progress only if: (1) "Visibility does not decline in any Class I area"; and (2) "There is an overall improvement in visibility, determined by comparing the average differences between BART and the alternative over all affected Class I areas." *Id.* § 51.308(e)(3)(i)-(ii).

Mass DEP does not offer dispersion modeling to compare the visibility improvements resulting from source-specific BART and its proposed BART alternative. Instead the agency claims that "the Alternative to BART achieves greater emissions reductions than BART and the geographic distribution of emissions reductions is nearly identical since all of the units subject to BART are included in the Alternative to BART." Mass. Reg. Haze SIP Rev. at 8. But this reasoning is flawed. The mere fact that the subject to BART units are a subset of the alternative BART units says nothing about the similarity of emission reduction distributions under each scheme. Instead, to assess emission distributions Mass DEP would have to compare the magnitude of emission reductions at units common to both schemes and evaluate whether the additional units covered by the BART alternative are proximate to subject to BART sources. Mass DEP has not done so, and therefore cannot presume that its BART alternative produces a similar distribution of emission reductions.

C. The Massachusetts Regional Haze SIP Impermissibly Fails to Include a Plan to Achieve the Reasonable Progress Goals Established by MANE-VU for 2018

Mass DEP has not demonstrated that the state will achieve the reasonable progress goals established by MANE-VU for 2018. MANE-VU states adopted as a reasonable progress goal emission reductions of 90% from each of the 167 power plant stacks in the MANE-VU region whose sulfur dioxide (“SO₂”) emissions were determined to significantly impair visibility in one or more MANE-VU Class I areas. The Massachusetts regional haze SIP fails to put the state on a path to achieve those reductions, even under the optimistic forecasts made by Mass DEP. This must be remedied.

In an effort to properly target controls on EGUs, MANE-VU conducted modeling to identify the hundred largest contributors to visibility impairment for each Class I area in the MANE-VU region. Mass. Reg. Haze SIP Rev. at 13. Through this modeling, MANE-VU identified 167 EGU stacks to target for emission reductions, including stacks at ten units and five sources in Massachusetts: Brayton Point Units 1-3, Canal Station Units 1-2, Mount Tom Unit 1, Salem Harbor Units 1, 3, and 4, and Somerset Unit 8. *Id.* at 13, 15. As Mass DEP recognized, “[g]iven the magnitude of their potential impact, controlling emissions from these stacks is important to improving visibility at MANE-VU Class I areas.” *Id.* at 13. MANE-VU adopted as a reasonable progress goal the reduction in SO₂ emission from these stacks by 90% from 2002 baseline levels by 2018. *Id.*

Where a state has participated in a regional planning process, “the State must ensure it has included all measures needed to achieve its apportionment of emission reduction obligations agreed upon through that process.” 40 C.F.R. § 51.308(d)(3)(ii). However, under Mass DEP’s proposed SIP, the state is not projected to achieve the 90% SO₂ reduction target by 2018 at major EGUs. Instead, Mass DEP projects emission reductions of between 67 and 87% from the affected units. This is unacceptable given its regulatory obligation, and particularly in light of the levels of SO₂ emissions cost-effectively achievable from these units.

As Mass DEP notes, many of the affected units in the state already have or are required to shortly install SO₂ controls. *Id.* at 15-16. Brayton Point Units 1 and 2 have spray dry absorbers which, according to EIA Form 923 for 2010, were achieving 90 and 91% control efficiencies at Units 1 and 2 respectively. These sulfur controls, however, were only in service 6,039 hours at Unit 1 and 5,475 hours at Unit 2 in 2010. *Id.* In order to ensure that these units meet the MANE-VU reasonable progress goal of 90% SO₂ emission reductions by 2018, Mass DEP must require as an enforceable operating condition the continuous operation of the spray dry absorbers. Only then can Mass DEP ensure that these units will achieve and maintain the requisite 90% SO₂ reductions.

In addition, Brayton Point Unit 3 is scheduled to install and operate a dry scrubber by 2013. Consequently, SO₂ emission reductions on the order of 96-98% should be cost-effectively achievable.¹⁶ Mass DEP should include as an enforceable condition of Unit 3's operating permit a requirement that the unit continuously operate its dry scrubber and enforce at least 96% control efficiency from this unit.

Maximizing the enforceable emission reductions at Brayton Point is particularly important in light of the enormous visibility impact that Brayton Point has on Maine's Acadia National Park, an estimated 7.2 to 11.15 deciviews on the worst days depending on the modeling platform. *See* Mass. Reg. Haze SIP at 75, Table 12.

Like Brayton Point Units 1 and 2, Mount Tom has installed a dry scrubber at its coal-fired unit. *See* Mass. Reg. Haze SIP Rev. at 15. Continuously operating this control technology should enable Mount Tom to achieve the 90% SO₂ emission reduction from MANE-VU's reasonable progress goals. Continuous operation of the dry scrubber at Mount Tom should therefore be included as an enforceable condition in Mount Tom's operating permit.

When coupled with an enforceable shutdown of all units at Salem Harbor and the shutdown of Somerset Unit 8, the requirement of continuous operation of SO₂ controls at Brayton Point and Mount Tom should enable Massachusetts to meet its obligation of achieving an enforceable 90% reduction in SO₂ emissions from the stacks covered by the MANE-VU reasonable progress goal.

III. CONCLUSION

For the reasons set forth above, Mass DEP must conduct source-specific BART analyses before it can seek to rely on its proposed alternative to BART. The BART analysis for Brayton Point Unit 2 should carefully consider the requirement that Brayton Point install SCR at this unit. In addition, in order to comply with MANE-VU's reasonable progress goals for SO₂ emissions from EGUs, Mass DEP should include enforceable conditions in the operating permits for Brayton Point and Mount Tom requiring continuous operations of the SO₂ emission controls at these units.

Respectfully submitted,

Joshua Berman
Associate Attorney
Sierra Club
50 F St. NW, 8th Floor
Washington, DC 20001

¹⁶ *See supra* note 11.

Mr. Keith
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Tel: (202) 650-6062
Fax: (202) 547-6009
Email: Josh.Berman@sierraclub.org

James McCaffrey, Director
Massachusetts Sierra Club
10 Milk Street, Suite 632
Boston MA 02108
Tel: (617) 423-5775
Fax: (617) 890-0338
www.sierraclubmass.org
Email: James.McCaffrey@SierraClub.org

Shanna Cleveland
Staff Attorney
Conservation Law Foundation
62 Summer Street
Boston, MA 02110
Tel: (617) 850-1716
Email: scleveland@clf.org